REMARKS

Claims 1-20 remain in this application, with independent claims 1 and 11 amended. Support for the amendments may be found, for example, at p. 5:15-22. Claims 9 and 20 are also amended, with amendments supported at p. 12:24 – 13:12. These amendments are made without disclaimer or waiver of any subject matter disclosed by the present application.

Claims 1, 3-6, 8-11, 13-16 and 18-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kunii. These rejections are respectfully traversed.

Kunii discloses a method for analyzing and displaying motions of a human being or animal in which captured motion is analyzed using inverse dynamics to calculate forces and torques exerted on each joint. Abstract; fig. 1; col. 5:26-29; col. 7:23-31. As explained in more detail in Applicants' last response, Kunii discloses modifying F(t) to model new motions, but fails to disclose accessing external force data G(t), or simulating response of an articulated figure to a sum of F(t) and G(t). Also, from the last Office Action it is undisputed that the present application and Kunii are concerned with different problems; Kunii is primarily concerned with motion analysis and skill training, while the present application is concerned with animation production for entertainment purposes. Patentability does not rest on this difference, which is merely mentioned as pertinent to a correct understanding of the respective disclosures. Instead, patentability rests on the fact that Kunii fails to disclose what is claimed, as explained more fully below.

Namely, Kunii fails to disclose or suggest:

> accessing force data *G(t)*, wherein *G(t)* comprises time-varying external force values for simulating a response of the articulated figure; and
>
> providing a sum of *F(t)* and *G(t)* suitable for input in simulating a dynamic response of the articulated figure using a forward-dynamics motion simulation to determine a simulated pose sequence *P(t)*

as defined by claims 1 and 11. No longer basing its argument on col. 8:39-44, the Office Action now recites col. 8:63-65 as disclosing accessing external force data *G(t)*, which reads

> Another modification other than the motion of is the modification of the acceleration due to gravity, which is necessary when simulating motion outside of the earth.

This disclosure that gravity may be set to some extra-terrestrial value fails to disclose accessing time-varying external force data. Gravity is not time-varying. The Office Action further argues that Kunii discloses summing F(t) and G(t) because "external force, gravity, is used as an input together with calculated torque (col. 7, lines 61-67, col. 8 lines 1-2 and 55-62) in determining motion of an articulated figure." Office Action, p.2. The Office Action continues to cite Kunii at col. 9:3-7 in support of this proposition, which was traversed in Applicants' last response, leading to the present additional citation of col. 7:61-67, col. 8:1-2 and 8:55-62. Without making any admission as to the argument advanced in the Office Action with respect to summing, Applicants note that claims 1 and 11 may be distinguished on the basis that gravity is not a time-varying force. Therefore, even if (which is not admitted), Kunii is presumed to disclose summing of gravitational forces with internal joint forces, it fails to disclose or suggest summing G(t) "time-varying external force values for simulating a response of the articulated figure" with F(t) "calculated torque values for the segments during sequential forward-looking intervals Δt, such as would result in movements of the articulated figure corresponding to Q(t)."

As explained in Applicants' last response, Kunii merely discloses modifying internal joint forces and applying the modified forces in an iterative manner to model new motions. Kunii utterly fails to disclose summing an inverse-dynamics solution *F(t)* with time-varying external force data *G(t)* to provide data suitable for input to a forward-dynamics simulation, as claims 1 and 11 define.

Failing to disclose or suggest all of the claimed elements of claims 1 and 11, Kunii therefore cannot anticipate these claims under § 102. The remaining rejected claims are also allowable, at least as depending from allowable base claims.

Further with respect to claims 8 and 18, Kunii fails to disclose calculating *G(t)* using *P(t)* as input to determine collision events, whereby impulse values for *G(t)* are calculated. The continued citation of Kunii fig. 5 and accompanying discussion at col. 7:50-60 as disclosing this element is again traversed. Fig. 5 merely shows "positions of the centers of gravity of the bodies and the forces exerted . . . superimposed on the model of filmed human bodies." Col. 7:51-53. The purpose of the display is to "show motions more concretely to be understood easily by anyone." Col. 7:58-60. Although the display shows a force 'FR' exerted by one body on another, Kunii fails to disclose doing anything with 'FR' other that displaying it on the filmed bodies. Kunii nowhere discloses determining collision events from an analysis of the motion data P(t), and utterly fails to disclose calculating impulse values for G(t) from the determination of collision events. Because Kunii fails to expressly or inherently disclose the claimed step, it cannot anticipate claims 8 and 18, which are therefore independently allowable.

With respect to claims 9 and 20, Kunii fails to disclose or suggest performing the calculation of F(t) and simulation of motion contemporaneously. Withdrawing its former citation of Kunii at col. 10:40-58, the Office Action now cites col. 11:10-15. Kunii there discloses an opposite approach:

> It can thus be seen that the present invention provides a dynamics analysis based human or animal motion animation using an articulated human or animal body model. The method consists of two stages: analyzing the basic movements of an actual human being or animal and using the analytic results to produce the new motions dynamically.

Thus, Kunii discloses that motion analysis results are used as input for motion simulation, and fails to disclose *contemporaneous* calculation of F(t) and motion simulation. The specification provides an example of calculating F(t) contemporaneously with P(t) at page 12:24 to 13:12. Kunii fails to disclose any such

process in which the calculation of internal forces using inverse dynamics, and simulation of a pose sequence are performed contemporaneously. Failing to disclose the claimed feature, Kunii does not anticipate claims 9 and 20, which are therefore independently allowable.

Claims 2, 7, 12 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kunii. These rejections are respectfully traversed. As shown above, Kunii fails to disclose or suggest all elements of the respective base claims 1 and 11. Hence, these claims are allowable, at least as depending from allowable base claims.

Applicants appreciate that the Examiner has taken the time to locate and cite additional prior art in support of the rejections under § 103(a), as set forth in the "Response to Arguments." However, these additional references were not cited under the 35 U.S.C. § 103(a) rejections heading, and it is not clear to Applicants whether they must respond to the citation of the additional references in order to traverse any rejections that may be based thereon.

While it is hoped that the next action will be an allowance of all the claims, if the Examiner finds it necessary to repeat these rejections under 35 U.S.C. § 103(a), Applicants respectfully request that the application of the additional references with respect to these rejections be clarified.

In view of the foregoing, the Applicants respectfully submit that Claims 1-20 are in condition for allowance. Reconsideration and withdrawal of the rejections is respectfully requested, and a timely Notice of Allowability is solicited.

The arguments for patentability set forth in this response are more than sufficient for overcoming the pending rejections, and are made without derogation or waiver of other arguments for patentability such as will or may be advanced regarding the claims at issue.

To the extent it would be helpful to placing this application in condition for allowance, the Applicants encourage the Examiner to contact the undersigned counsel and conduct a telephonic interview.

While no fees are believed due in connection with the filing of this response, the Commissioner is authorized to charge any fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-3683.

Respectfully submitted,

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